IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:	) Art Unit: 1616
David P. Schneider	) Examiner: Neil Levy
Serial No.: 09/375,767	) Date: June 19, 2001
Filed: August 17, 1999	) For: SHARK DETERRENT

SUPPLEMENTAL AMENDMENT

Honorable Commissioner of Patents and Trademarks
Washington, DC 20231

S I R:

In response to the Official Action dated May 22, 2001, and pursuant to the Amendment dated March 1, 2001, kindly attach the following additional pages to the above-identified amendment.

In view of submission herewith of these additional pages, applicant respectfully requests that claims 25 - 45 be allowed, and that the case be passed to issue.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231 on June 19, 2001.

6/13/01

David P. Schneider 6/13/01

been melted away. Some of the coatings are insoluble, they must be broken open physically before the chemicals will be exposed to the water in which they are immersed when in use.

At least three open sea tests have been conducted by interested, independent parties on the invented chemical conglomerates. These parties were unpaid, marine professional volunteers. They found on great white, hammerhead and gray reef sharks that these sharks would not venture any closer than ten feet away from raw and bloody meat when this meat was protected by the invented chemical conglomerate mixture.

SUMMARY OF THE INVENTION

It is an object of the present invention to produce a shark repulsive chemical cylinder or other shaped chemical conglomerate, even particulates, the ingredients of which, such as Sodium Lauryl Sulfate and Sodium Sulfate, are described in my previous patents listed above. The water proof coating on this cylinder or other shaped chemical conglomerates will act in a somewhat different fashion then those described in my previously mentioned patents.

It is the primary object of this invention to teach methods for retarding the melting rate of the chemical conglomerate by coating it with various water soluble and/or waterproof coatings. Such retardation of melting can also be done by shaping the chemical conglomerate so that in its dried and hardened state it will posses the ability to channel the dissolving water through its enclosed shape such that the action of the melting water will be mitigated. By preventing agitation and by the water being calmed by the internal shapes and baffles of the chemical

conglomerate the water will be kept from melting the chemical too rapidly. This is essential to the proper function of the shark repellent since it must be able to provide long lasting, continuing and constant shark protection to its users who are for sometimes days on end shipwrecked at sea and therefor in constant danger of surprise shark attack. A manual release of shark repellent as taught by some other patents is not good enough to save a person from sharks at sea. Most shark attacks are made by the shark swimming up from below its intended victim where the victim cannot see the shark to give the victim a warning. So the manual release of shark repellent is normally impossible before the shark attacks.

It is a further object of this invention to use bulkheads or special chemical conglomerate shapes which by their very configuration help prolong the dissolution time taken to completely dissolve the chemical out of its containment.

It is still a further object of this invention to provide a container for these chemical conglomerates which may be a separate part from the chemical conglomerate yet protect it from too fast a dissolving rate.

It is a further object of this invention to provide a plastic or metallic container for the chemicals which will negate the need for water proof or water retardant coatings.

It is yet another object of this invention to describe a different and more effective mixture of chemicals for deterring shark attacks.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view of a chemical cylinder coated with the containment materials which are one embodiment of the invention's systems;

FIG. 2 is a side view of a chemical cylinder showing one method for improved manufacturing tooling techniques;

FIG. 3 is a side view of a group of chemical conglomerate cylinders showing another possible arrangement of these cylinders in relationship to one another;

FIG. 4 is a side view of a chemical conglomerate shaped to prolong melting;

FIG. 5 is a side view of a chemical conglomerate placed inside a rigid or flexible container without the use of any surface coatings.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings wherein like reference characters indicate like parts in the several views, there is shown in FIG. 1 a chemical conglomerate 12 molded, shaped and hardened into the shape of a cylinder. This cylinder is the preferred type of shape but not the exclusive shape for this chemical conglomerate so many other shapes could be utilized. In one

embodiment of this chemical conglomerate it is made of a dry, granular anhydrous sodium sulfate and liquid sodium lauryl sulfate mixed together in a ratio by volume which is at least two thirds liquid sodium lauryl sulfate to no more than one third dry, granular anhydrous sodium sulfate. The use of sodium lauryl sulfate to repel sharks is well known and has not only been recited by Schneider (US patent 4,917,280) and Hayes (US patent 5,407,679) but has been successfully tested by independent marine biology researchers as a result of this inventor supplying these researchers with his invented chemical conglomerate cubes for testing. Prior to my efforts, a Dr. Bernard J. Zahuranec, who was employed by the US Navy, edited a book titled " Shark Repellents from the Sea " which included articles by, among others, Dr. Eugenie Clark, then of the University of Maryland. She detailed her successful experiments repelling sharks from bait objects that used Moses sole fish excretions for protection. These excretions are mimicked by the chemical sodium lauryl sulfate. This book was published for The American Association for the Advancement of Science in 1983 and has a Library of Congress Catalog Card number 83-60529 ISBN 0-86531-593-0 .

To this mixture can be added varying amounts of polyvinyl acetate resin latex (commonly known as organic, water soluble, white liquid glue) which adds the effect of prolonging the time for a given volume of the mixture to dissolve into water when the chemical conglomerate which contains this white glue is immersed into water. The sodium sulfate acts as a drying agent for the sodium lauryl sulfate. While drying, the chemical conglomerate can be molded into any shape. After it is dry, it can also be ground into particulate granules if desired. Useful types of standard molds for the purpose of shaping and drying to hardness this

slurry of chemical conglomerate can be made of standard materials such as metal, wood, ceramic, etc. which materials are normally used for the construction of such molds. Steel pipe, for example, of different diameters could produce the cylindrical chemical conglomerate shapes described. Such steel pipe could be cut in half lengthwise and the resulting halves hinged or otherwise connected back together so the chemical conglomerate slurry, when filled into such a mold form will be, after drying, molded into a rigid cylinder shape. Such a cylinder mold could be easily opened to remove the resultant chemical conglomerate shape when the mold halves are separated for example by swinging open the two halves of the mold on their hinges. If desired, a solid pipe whose inside surfaces were lubricated with a mold release such as liquid silicon could be used to mold the chemical conglomerate into a cylindrical shape and after the shape had hardened inside the pipe the shape could be pushed out of the pipe utilizing a plunger to mechanically extricate the chemical conglomerate shape from inside the pipe mold. The chemical conglomerate slurry could likewise be packed inside an aluminum can or a can made from any other plastic or metal, etc. and sealed inside using an aluminum, etc. lid, that lid having a hole which could be closed with either a water soluble or insoluble closure or even no closure at all. Such a closure could be designed to require manual opening or it could be water soluble and open when immersed in water. Yet another configuration would be a cluster of such cans, each can or container containing the chemical conglomerate. Each container could have water soluble closures which would melt open at different times to allow the chemical contents of the first can opened

to completely dissolve before the second can would have its closure dissolve and open to expose its chemical contents to the water and so on until all cans had in turn had their closures melt open one after the other through time. After drying, the chemical conglomerate could also be made into various shapes by high pressure compaction in a set of press dies whose internal surfaces are formed to provide whatever shape is desired to be imparted to the compacted chemical conglomerate. Such shapes would be designed to be useful in helping retard the melting rate of the chemical conglomerate so shaped. The white glue acts as a water soluble binder. This chemical conglomerate in a cylinder shape 12 may also have, if desired to retard its melting in water, one or more coatings of slower melting materials of different kinds suitable for that purpose. One such material is common liquid white glue but there are numerous other types of materials which could perform the same function. This coating 11 would be applied as a first completely encompassing coating to slow the melting of the chemical conglomerate in the cylinder shape. This first coating 11 could then have over top of it applied a waterproof coating 10 which for example could be a polyurethane based caulking material. This waterproof coating 10 is applied to all but one end 14 of the chemical conglomerate. It could be further restricted in its application to just one narrow strip on that end 14 or on the side of the chemical conglomerate cylinder shape 12 or to an even smaller area such as an area of only a half inch in diameter or even smaller if desired. The first coating 11 can be made for example of white glue or some other slow melting material by dipping the dried chemical conglomerate shape into a vat of this

a top on the can which had a hole in place that had no closure or had a water soluble closure. Then, in an emergency such as a ship sinking, the can containing the chemical conglomerate, which could be attached to the user's person or life raft, could automatically start melting through such a hole in the can's top as soon as it was immersed into the water. Another possibility for a can closure is a water soluble closure. Different water soluble materials using latex as a chemical base for example, can be formed into plastic solids that have different melting rates in water.

FIG. 2 shows the same chemical cylinder as in Fig. 1 but with a piece of twine or string or wire 13 cast inside the chemical conglomerate cylinder when the cylinder was formed. Such a wire or string tool 13 may be used to hang the cylinder suspended in air without the need to touch the cylinder. This will allow the cylinder to be immersed into a vat of liquified coating material much more readily than if such a tool was not included in the cylinder's structure. It will also facilitate the subsequent drying of the coated cylinder by providing for it to be hung in mid air untouched
by any supporting means which would be needed if this wire or string tool 13 was not in place on the cylinder. If desired, this tool can be cut away after all manufacturing is completed.

FIG. 3 shows the same chemical cylinder 12 as in Fig. 1 but situated in a pattern in proximity with other chemical cylinders. These other chemical cylinders may be the same as all their neighboring cylinders or they may each contain different chemicals or even contain mechanical or electrical or electronic devices intended for the revulsion of sharks or other sea creatures. These cylinders or other

shapes can be held in permanent positions in reference to one another by the same material used to form coating 10 as identified in Fig. 1 or they may be situated near one another and

held in that situation by some other mechanical means such as a metal or plastic framework 17. The arrangement of these shapes in relationship to one another may describe any pattern and not just the circular one shown. It is useful to also design a grouping of chemical conglomerate containers as described above whose closures are able to melt away in water at differing rates of speed so that only one container at a time would have its closure open to the entry of sea water. This would cause only one container at a time to be dissolving its chemical contents into the surrounding water and would considerably prolong the time that the chemicals would be available to disperse into the water from out of the containers.

FIG. 4 shows the same chemical cylinder 12 as in Fig. 1 but somewhat elongated in shape and displaying a narrow section (which item 15 can also be described as a bulkhead created restriction) 15 at regular intervals which is smaller in diameter that those larger diameter sections 16 on either side of it. This restriction 15 is useful in diminishing the amount of water that can wash in upon the chemical located in each of the adjoining large diameter segments 16. This can slow the sequential melting of the chemicals in each of the successive large diameter chambers 16 and have the effect of making the whole chemical assembly slower melting in the water. This restriction 15 can be effected by molding it into the molded shape of the chemical conglomerate before that completed shape is coated. This restricted orifice can also be accomplished by creating a plastic disc with a hole in its center or a multiple number of small holes in its center section. By placing duplicates of this plastic disc into the chemical conglomerate's molded shape or into its aluminum can during the

formation of the chemical conglomerate inside that can this plastic disc will form repeatedly spaced bulkheads 15 into the mold at regular intervals. These bulkheads can then become an integral part of the completed chemical cylinder 12. Such a bulkhead part could be made of any rigid or semirigid or flexible material and have a small hole piercing its center or have several holes piercing it in several locations so the water could get through each bulkhead

container 18 forming chambers 16 in container 18. These bulkheads 15 create the narrow opening between the larger chambers 16 at regular or irregular intervals as desired. This restriction 15 is useful in diminishing the amount of water that can wash in upon the chemical located in the larger diameter segments 16 which are located on either side of the flow restricting bulkhead 15.

It is obvious from the above explanation that these invented shark repellents can be produced with the preferred method of mixing sodium lauryl sulfate with sodium sulfate in a ratio of two parts sodium lauryl sulfate to one part sodium sulfate to form a thick slurry which can then be packed into two part molds or single part molds or molds made of flexible plastics or rubbers and allowed to air dry at room temperature or possibly in a very low heat oven for several days until the hardened chemical conglomerate can be stripped from its lubricated molds. It can then be coated with a water soluble, resinous coating and again allowed to dry so this water soluble coating forms an intimate coating over the whole surface of the chemical shape. Several successive coatings of this type can be done if desired and even a waterproof coating can be applied and dried onto the surface of the chemical. Variations of coatings and molded shapes for the chemical can be employed to control its subsequent rate of melting once it has been immersed into sea water which is its ultimate use and purpose. These different shapes and coatings are described above in this specification although other shapes and coatings are possible and not beyond the scope of this patent. The mixing of a melt retarding material into the sodium lauryl sulfate and sodium sulfate conglomerate slurry before it is even molded and dried to shape

is yet another invented and practical means of prolonging the melting of this chemical conglomerate.

It is obvious that the shapes described and the coatings mentioned above may be replaced by other means and yet not avoid the scope of this patent. For example, the waterproof coating 10 in Fig. 1 need not be a coating at all but for example it could be made out of a circular sleeve of plastic into which the chemical conglomerate cylinder or other shape could be inserted. This plastic cylinder container could be rigid or flexible and sealed on its end or ends after filling by any common method now in use to accomplish such a sealing. Such sealing methods are in common use and include gluing shut the ends or just the one end with a glue or solvent or using a heat sealing or heat shrinking method and so on.

It is also obvious that contrary to the FIG. 1 arrangement of the two coatings, that either one of those coatings could be used by itself without the other coating or even three coatings or more could also be employed without going outside the teachings and coverage of this patent.

It is obvious that the embodiments of this invention could be successfully effected using many different types of materials other than those described in this patent and even different from those normally used currently. I do not intend to limit these designs to

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25. A shark repellent chemical slurry conglomerate comprising at least one molded and hardened shape that creates a slow melting characteristic configuration, said shape comprising no less than two thirds sodium lauryl sulfate by volume, and no more than one third sodium sulfate by volume.

26. The slow melting, shaped, shark repelling chemical conglomerate of claim 25 which includes in its original mixture as much as 50% by volume of a water soluble binder.

27. The slow melting, shaped, shark repelling chemical conglomerate of claim 26 wherein said water soluble binder is a polyvinyl acetate resin latex.

28. The slow melting, shaped, shark repelling chemical conglomerate of claim 25 further comprising a waterproof, dried-on coating of a liquid caulking material.

29. The slow melting, shaped, shark repelling chemical conglomerate of claim 28 wherein said waterproof, dried-on coating of liquid caulking material is a polyurethane-based caulking.

30. The slow melting, shaped, shark repelling chemical conglomerate of claim 25 further comprising at least one outer, dried-on liquid coating of a water soluble composition.

31. The slow melting, shaped, shark repelling chemical conglomerate of claim 30 wherein said outer, dried-on liquid coating of a water soluble composition is a polyvinyl acetate resin latex.

32. The slow melting, shaped, shark repelling chemical conglomerate of claim 25 further comprising a partially imbedded wire that protrudes from the surface of said slow melting, shaped, shark repelling chemical conglomerate.

33. The slow melting, shaped, shark repelling chemical conglomerate of claim 25 wherein said conglomerate is a unitary longitudinal member having an outer dimension and further comprising restrictive areas therealong said restrictive areas having smaller dimensions than said outer dimension.

34. The slow melting, shaped, shark repelling chemical conglomerate of claim 33 formed with bulkheads interspersed along its length said bulkheads having at least one hole therein.

35. The slow melting, shaped, shark repelling chemical conglomerate of claim 25 said chemical conglomerate being at least partially coated with a dried waterproof sealant for restricting dispersion of said chemical conglomerate into water, said coating acting as a container for enclosing said chemical conglomerate.

36. The slow melting, shaped, shark repelling chemical

conglomerate of claim 35 wherein said sealant comprises a polyurethane based caulking.

37. The slow melting, shaped, shark repelling chemical conglomerate of claim 35 wherein said container is of a soda pop type designed metal can with a pop top opening tab, creating a hole in the lid when activated.

38. The slow melting, shaped, shark repelling chemical conglomerate of claim 35 wherein said container is a plastic container with a pop top hinged plastic lid portion, creating a small opening in said lid when activated.

39. The slow melting, shaped, shark repelling chemical conglomerate of claim 35 wherein said container comprises a lid and at least one aperture disposed in the surface of said container lid communicating with the opposite side thereof.

40. A shark repellent chemical slurry conglomerate comprising at least one molded and hardened shape that creates a slow melting characteristic configuration, said shape housed in a water insoluble container and comprising no less than two thirds sodium lauryl sulfate by volume, and no more than one third sodium sulfate by volume.

41. The slow melting, shaped, shark repelling chemical conglomerate of claim 40 wherein said water insoluble container includes much as 50% by volume of a water soluble binder.

42. The slow melting, shaped, shark repelling chemical conglomerate of claim 41 wherein said water soluble binder is a polyvinyl acetate resin latex.

43. The slow melting, shaped, shark repelling chemical conglomerate of claim 40 wherein said insoluble container is mechanically mounted together with at least one other identical container, said containers having water soluble closures that melt in water at differing rates.

44. The slow melting, shaped, shark repelling chemical conglomerate of claim 43 wherein said insoluble containers are not identical.

45. The slow melting, shaped, shark repelling chemical conglomerate of claim 43 wherein said grouping of insoluble containers include at least one container that has a manually opened closure that is insoluble in water and/or at least one container whose opening hole has no closure.